

Type 2 diabetes patients transplanted with own bone marrow stem cells reduces insulin use

June 28 2013

A study carried out in India examining the safety and efficacy of self-donated (autologous), transplanted bone marrow stem cells in patients with type 2 diabetes (TD2M), has found that patients receiving the transplants, when compared to a control group of TD2M patients who did not receive transplantation, required less insulin post-transplantation.

The study appears as an early e-publication for the journal *Cell Transplantation*.

"There is growing interest in the scientific community for cellular therapies that use bone marrow-derived cells for the treatment of [type 2 diabetes mellitus](#) and its complications," said study corresponding author Anil Bhansali, PhD professor and head of the Endocrinology Department at the Post Graduate Institute of Medical Education in Chandigarh, India. "But the potential of [stem cell therapy](#) for this disease is yet to be fully explored."

While there is growing interest in using stem cell transplantation to treat TD2M, few studies have examined the utility of bone marrow-derived [stem cells](#). By experimenting with bone marrow-derived stem cells, the researchers sought to exploit the rich source of stem cells in bone marrow.

Their study aimed at evaluating the efficacy and safety of autologous

bone marrow-derived [stem cell transplantation](#) in patients with T2DM and who also had good glycemic control. Good glycemic control emerged as an important factor in the transplantation group and in the non-transplanted control group.

Cell transplantation had a significant impact on the patients in this study as those administered cells demonstrated a significant reduction in insulin requirement. A significantly smaller reduction in the insulin requirement of the control group was also observed but a "repeated emphasis on life style modification" was believed to be a contributing factor in this effect.

According to Dr. Bhansali, the strength of their study included the inclusion of a homogenous patient population with T2DM which exhibited good glycemic control, and the presence of a similar [control group](#) that did not get cell transplants.

"The efficacy and safety of stem cell therapy needs to be established in a greater number of patients and with a longer duration follow-up," concluded Bhansali and his co-authors. "The data available so far from animal and human studies is encouraging, however, it has enormous limitations."

The researchers recommended determining which type of stem cells -hematopoietic, bone marrow or placenta-derived - might be best to treat T2DM. In addition, they said that post-transplantation patients needed close monitoring for the development of neoplasia as stem cells - whether multipotent or pluripotent - have the potential for malignant transformation.

They concluded that "autologous [bone marrow](#)-derived stem cell therapy in patients with T2DM results in significant decrease in insulin dose requirement."

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Provided by Cell Transplantation Center of Excellence for Aging and Brain Repair

Citation: Type 2 diabetes patients transplanted with own bone marrow stem cells reduces insulin use (2013, June 28) retrieved 20 March 2024 from

<https://medicalxpress.com/news/2013-06-diabetes-patients-transplanted-bone-marrow.html>

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